AMENDMENTS TO THE CLAIMS

A listing of all claims and their current status in accordance with 37 C.F.R. § 1.121(c) is provided below.

1. (Currently amended) A method of detecting the presence of mixed venous and arterial blood pulsation in tissue, comprising:

receiving first and second electromagnetic radiation signals from a blood perfused tissue portion corresponding to infrared and red wavelengths of light;

obtaining a measure of a phase difference between ~~said~~ the first and second electromagnetic radiation signals;

comparing ~~said~~ the measure with a threshold value to form a comparison; ~~and~~

detecting the presence or absence of venous pulsation using ~~said~~ the comparison; and

indicating the presence of venous pulsation to a caregiver if venous pulsation is present.

2. (Currently amended) The method of claim 1 ~~further~~ comprising filtering ~~said~~ the first and second electromagnetic radiation signals before ~~said~~ the obtaining ~~said~~ the measure, to pass portions of ~~said~~ the first and second electromagnetic radiation signals having frequencies at or near the pulse rate or harmonics of the pulse rate of ~~said~~ the blood perfused tissue.

3. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference between ~~said~~ the first and second electromagnetic radiation signals comprises obtaining a measure of a persistent phase difference between ~~said~~ the first and second electromagnetic radiation signals.

4. (Currently amended) The method of claim 3 wherein ~~said~~ the obtaining a measure of a persistent phase difference comprises integrating ~~said~~ the measure of a phase difference over a time period.

5. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises obtaining a measure of the openness of an ellipse on a Lissajous plot formed by comparing the first electromagnetic radiation signal against the second electromagnetic radiation signal.

6. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises analyzing a cross-correlation function of ~~said~~ the first and second electromagnetic radiation signals, as a function of a delay interval between them.

7. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises a frequency domain analysis and subtracting the phases of ~~said~~ the first and second electromagnetic radiation signals at a frequency.

8. (Currently amended) The method of claim 7 wherein ~~said~~ the subtracting the phases of ~~said~~ the first and second electromagnetic radiation signals comprises taking the complex conjugate of ~~said~~ the first and second electromagnetic radiation signals, and dividing ~~said~~ the complex conjugate by the product of the magnitudes of ~~said~~ the first and second electromagnetic radiation signals.

9. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises obtaining ~~said~~ the measure of a phase difference at or near a fundamental pulse rate of ~~said~~ the blood perfused tissue.

10. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises obtaining ~~said~~ the measure of a phase difference at or near a harmonic of a pulse rate of ~~said~~ the blood perfused tissue.

11. (Currently amended) The method of claim 1 wherein ~~said~~ the obtaining a measure of a phase difference comprises obtaining ~~said~~ the measure of a phase difference at or near a fundamental or at or near a harmonic of a pulse rate of ~~said~~ the blood perfused tissue.

12. (Currently amended) The method of claim 1 ~~further~~ comprising providing a notification of the presence of venous pulsation.

13. (Currently amended) A device for detecting the presence of mixed venous and arterial blood pulsation in tissue, comprising:

means for receiving first and second electromagnetic radiation signals from a blood perfused tissue portion corresponding to infrared and red wavelengths of light;

means for obtaining a measure of a phase difference between ~~said~~ the first and second electromagnetic radiation signals;

means for comparing ~~said~~ the measure with a threshold value to form a comparison; ~~and~~

means for detecting the presence or absence of venous pulsation using ~~said~~ the comparison; and

means for indicating the presence of venous pulsation to a caregiver when venous pulsation is present.

14. (Currently amended) The device of claim 13 ~~further~~ comprising a filter configured for filtering ~~said~~ the first and second electromagnetic radiation signals before obtaining ~~said~~ the measure, to pass portions of ~~said~~ the first and second electromagnetic radiation signals having

frequencies at or near the pulse rate or harmonics of the pulse rate of ~~said~~ the blood perfused tissue.

15. (Currently amended) The device of claim 13 wherein ~~said~~ the means for obtaining a measure of a phase difference between ~~said~~ the first and second electromagnetic radiation signals are configured for obtaining a measure of a persistent phase difference between ~~said~~ the first and second electromagnetic radiation signals.

16. (Currently amended) The device of claim 15 wherein ~~said~~ the means for obtaining a measure of a persistent phase difference comprises means for integrating ~~said~~ the measure of a phase difference over a time period.

17. (Currently amended) The device of claim 13 wherein ~~said~~ the means for obtaining a measure of a phase difference is configured for obtaining a measure of the openness of an ellipse on a Lissajous plot formed by comparing the first electromagnetic radiation signal against the second electromagnetic radiation signal.

18. (Currently amended) The device of claim 13 wherein ~~said~~ the means for obtaining a measure of a phase difference is configured for analyzing a cross-correlation function of ~~said~~ the first and second electromagnetic radiation signals, as a function of a delay interval between them.

19. (Currently amended) The device of claim 13 wherein ~~said~~ the means for obtaining a measure of a phase difference is configured for a frequency domain analysis and for subtracting the phases of ~~said~~ the first and second electromagnetic radiation signals at a frequency.

20. (Currently amended) The device of claim 19 wherein ~~said~~ the means for subtracting the phases of ~~said~~ the first and second electromagnetic radiation signals is configured for taking the complex conjugate of ~~said~~ the first and second electromagnetic radiation signals, and dividing ~~said~~ the complex conjugate by the product of the magnitudes of ~~said~~ the first and second electromagnetic radiation signals.

21. (Currently amended) The device of claim 13 wherein ~~said~~ the means for obtaining a measure of a phase difference is configured for obtaining ~~said~~ the measure of a phase difference at or near a fundamental or at or near a harmonic of a pulse rate of ~~said~~ the blood perfused tissue.

22. (Currently amended) The device of claim 13 ~~further~~ comprising means for providing a notification of the presence of venous pulsation

23. (New) A device for measuring physiological parameters, comprising:

a photodetector configured to receive a first signal and a second signal from blood perfused tissue; and

a pulse oximeter coupled to the photodetector and configured to detect the presence of venous pulsation based on a phase difference between the first and second signals, the pulse oximeter having a display configured to notifying a caregiver of the presence of venous pulsations.

24. (New) A method of using a device configured to determine a percent oxygen saturation of blood, comprising the acts of:

placing a sensor on blood perfused tissue, the sensor being coupled to a pulse oximeter;

reading a display coupled to the pulse oximeter to determine if venous pulsation is present in a detected signal; and

if venous pulsation is present, adjusting the sensor to preclude the presence of venous pulsations.

25. (New) The method of claim 24 wherein the act of adjusting the sensor comprises applying additional pressure to the blood perfused tissue with the sensor.

26. (New) The method of claim 24, wherein the act of adjusting the sensor comprises tightening a headband coupled to the sensor.

27. (New) A method of manufacture comprising:

configuring a device to calculate physiological parameters based on signals detected from blood perfused tissue;

providing the device with the ability to detect the presence of a venous pulsation; and

providing the device with a display adapted to indicate when a venous pulsation is present.